



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/851,779	05/08/2001	Boaz Kenan	003587 USA 02/MASK/RT/DB	4385
32588	7590	07/29/2004	EXAMINER	
APPLIED MATERIALS, INC. 2881 SCOTT BLVD. M/S 2061 SANTA CLARA, CA 95050			BALI, VIKKRAM	
			ART UNIT	PAPER NUMBER
			2623	

DATE MAILED: 07/29/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/851,779

Applicant(s)

KENAN ET AL.

Examiner

Vikkram Bali

Art Unit

2623

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 27-57 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 27-29, 31-51, 55-57 is/are rejected.
- 7) ☒ Claim(s) 30 and 52-54 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 3.
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: ____.

Art Unit: 2623

DETAILED ACTION

While there are some similarities in the claims examined (claims 27-57) and the patented (US 6,268,093) claims 1-26, the claims 27-57 were restricted in the parent case S/N 09/417,518. Based on the restriction in the parent case 09/417,518, double patenting rejection is barred under 35 USC 121.

Claim Objections

1. Claims 34 and 36 are objected to because of the following informalities: claims 34 and 36 depend upon a cancel claim.

Appropriate correction is required. For all the examining purposes claims 34 and 36 are considered to be dependent upon claim 27.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 36-40 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 36 recites the limitation "said first, said second, and said third cameras" in lines 6 and 7. There is insufficient antecedent basis for this limitation in the claim.

Claims 37-40 depend on claim 36 and therefore, they are rejected too.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. Claims 27-29, 31, 34, 36-40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Feldman et al (US 4595289).

With respect to claim 27, Feldman discloses a mask inspection system with a scanner (figure 4, 32, 34) acquiring a plurality of aerial images of a reticle (figure 4, 32 and 34 acquiring aerial images of the mask) and an image processing module detecting variations in the images (see figure 4, 36 and col. 4, lines 4-10 for the description of the

Art Unit: 2623

unit 36, which compares the images taken by the scanner from the two different dies) as claimed. However, he fails to disclose the plurality of aerial images of first dies and the plurality of images of second die, as claimed. But, as stated in the reference by Feldman that the images are acquired by the scanners when the mask is on a table which moves in X,Y direction (see col. 3, lines 50-55), that means the multiple images are acquired of a die in order to fully image the die. Therefore, one ordinary skilled in the art at the time of invention can obviously consider taking the multiple images i.e. plurality of images, to make sure the entire die is imaged.

With respect to claims 28 and 29, Feldman further discloses the plurality of cameras, and first second and third camera for acquiring first, second and third image of the reticle, (see figure 4, 32, 34 and 85, photo-detectors) as claimed.

With respect to claim 31, Feldman further discloses, a light source for illuminating said reticle and plurality of cameras, (see figure 4, 20, 22 and 32 and 34) as claimed.

With respect to claim 34, Feldman further discloses, a stage for placing the reticle and moving the stage, (see col. 3, lines 50-55) as claimed.

With respect to claim 36, Feldman further discloses, a transmission light illumination system, a dark field illumination system, an optical system for collecting emerging light, (see figure 4, 20 and 22 as transmission light illumination system, 61 and 62 as dark

Art Unit: 2623

field illumination system and the 32, 34 and 85 and 87 as the photo-detectors for collecting the light) as claimed.

With respect to claim 37, Feldman further discloses, a numerical aperture diaphragm reproducing the set exposure conditions, (see col. 8, lines 35-39, the numerical aperture does makes the exposure to match the image detectors in order to image the object) as claimed.

With respect to claims 38-40, Feldman further discloses, the dark field illumination system is positioned adjacent to optical system, it's a coaxial optical system, and opposite to the transmission illumination system, (see figure 4, 20 and 22 transmission illumination is opposite to the 61 and 62 dark field illumination system, 61 and 62 are adjacent to the optical system and are coaxial to optical system) as claimed.

Claims 41 and 42 are rejected for the same reasons as set forth in the rejections for claims 27 and 36 because claims 41 and 42 are claiming similar subject matter as claimed in claims 27 and 36.

7. Claims 32-33, 35, 43-50, 55 are rejected under 35 U.S.C. 103(a) as being unpatentable over Feldman et al (US 4595289) in view of Elyasaf et al (US 5892579).

With respect to claim 32, Feldman discloses the invention substantially as disclose and as describe above in claim 31. However, Feldman fails to disclose, light

Art Unit: 2623

source be a pulsating light source, as claimed. Elyasaf in optical inspection of the mask system teaches a pulsating light source (see col. 5, lines 21-23) as claimed.

The two references are combinable as they are analogous because they are solving similar problem of mask inspection. One ordinary skilled in the art at the time of invention can obviously use any conventional light source as suggested by the primary reference of Feldman (see col. 3, line 44-45).

With respect to claim 33, Elyasaf further teaches, light source is a laser (see col. 3, lines 44-45) as claimed.

Claim 35 is rejected for the same reasons as set forth in the rejection of claim 34, because claim 35 is claiming similar subject matter as claim 34.

With respect to claim 43, Feldman discloses the inventions, further more, Elyasaf teaches a optical means for producing the magnifies aerial images and imaging means for acquiring the magnified aerial images, (see col. 3 last two lines to col. 4 first 5 lines and figure 1) as claimed.

Claims 44-49 are rejected for the same reasons as set forth in the rejection of claims 32-35 and 38-39 respectively, because claims 44-49 are claiming similar subject matter as claims 32-35 and 38-39 respectively.

Art Unit: 2623

With respect to claim 50, Feldman further discloses, imaging means having plurality of cameras for acquiring the images of transmission illumination, (see photo-detectors 32 and 34 acquiring images of reticle once illuminated by transmission light) as claimed.

With respect to claim 55, Feldman further discloses, a display, (see figure 4, 38 and col. 5, lines 540 as claimed.

With respect to claim 57, Feldman further discloses, a homogenizer disposed in the vicinity of transmission light illumination means, (see figure 4, 24 and 26 and col. 3, lines 45-46, they are the lens assemblies to make sure the light does propagate in the line of the mask i.e. reducing the speckle) as claimed.

8. Claims 51 and 56 are rejected under 35 U.S.C. 103(a) as being unpatentable over Feldman et al (US 4595289) in view of Elyasaf et al (US 5892579) as applied to claim 50 above, and further in view of Feldman et al (US 6124924).

With respect to claim 51, Feldman and Elyasaf disclose the invention substantially as disclose and as describe above in claim 30. Feldman further discloses, a first camera, a second camera and a third camera for acquiring the images, (see photo-detectors 32, 34 and 85 acquiring images of reticle) as claimed. However, they fail to disclose, the first, second and third images are of transmission light illuminations means, as claimed. Feldman '924, teaches using plurality of sensing elements that typically detect the light signals, in place of single CCD camera.

Art Unit: 2623

One ordinary skilled in the art at the time of invention can incorporate the teachings of Feldman '924 in to the Feldman and Elyasaf system in order to generate multiple images that will be position/location sensitive, this will make the system more accurate as the images will be more accurate. The two references are combinable because they are solving similar problem of mask inspection, thereby making them analogous.

With respect to claim 56, it is well known in the art to have the light detection sensor is of same wavelength that is of the exposure and of the light of the light source. Because, it is known in the art, in order to acquire the image one should use a sensor with the same wavelength that is of the light source and the exposure. Therefore, one ordinary skilled in the art at the time of invention can use the conventional knowledge of should using a sensor with the same wavelength that is of the light source and the exposure to acquire accurate images.

Allowable Subject Matter

9. Claims 30 and 52-54 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

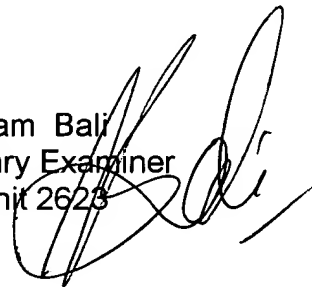
Art Unit: 2623

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Vikkram Bali whose telephone number is 703.305.4510. The examiner can normally be reached on 7:30 AM - 4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amelia Au can be reached on 703.308.6604. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Vikkram Bali
Primary Examiner
Art Unit 2623



vb
July 14, 2004